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Pine Lake
2023-2024 Aquatic Plant Management Update

October 21, 2024

Prepared for:
Pine Lake Property Owners Association
WDNR AIS GRANT: ACEI-335-23

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INTRODUCTION

The Pine Lake Property Owners Association (PLPOA or the Association) is a group responsible for the management of Pine Lake's aquatic invasive species (AIS), particularly Eurasian water-milfoil (*Myriophyllum spicatum* – EWM). Wisconsin Lake & Pond Resource (WLPR) was contracted by the Association to provide aquatic plant surveys and a report summarizing prior management actions and results and historical comparisons for the Lake. WLPR furnished all labor, materials, tools and equipment necessary to perform all operations. This report provides a summary of observations and conclusions for the 2023-24 large-scale EWM control and aquatic plant monitoring project under requirements from a WDNR AIS management grant.

Pine Lake is a 156-acre natural seepage lake located in the Town of Springwater in northern Waushara County, Wisconsin. The water level in Pine Lake fluctuates based on groundwater elevations and has recently reached a historic high. Based on current water level elevations, Pine Lake encompasses 156-acres, has a maximum depth of 58 feet, mean depth of 27.5 feet, and 2.45 miles of shoreline. A shallow sand bar splits the lake into two basins. The western portion is shallower and highly vegetated while the eastern basin is deeper with vegetation found only at the perimeter. The Pine Lake Property Owners Association is an active lake Association that has been managing aquatic plants on the lake through mechanical and hand harvesting along with periodic herbicide applications. Eurasian water-milfoil, an AIS, is present within the water. Since discovery, some populations of EWM in the lake have been confirmed to be a hybrid of Eurasian and northern water-milfoil (E/HWM). The PLPOA has continuously worked on lake management projects to protect and enhance their resource for all users. Their main focus has been on reduction of non-native invasive species, primarily E/HWM. In large areas of the lake E/HWM has been shown to cause significant impacts to recreation, use, and habitat.

In response to increasing threats and impacts to the waters, the Association updated the lake management plan and. This assessed conditions, reviewed collected data and user input, and laid out management recommendations for the future. For a summary of past aquatic plant survey results and E/HWM management recommendations please see *Pine Lake – Aquatic Plant Management Plan* (Wisconsin Lake & Pond Resource, August 2022)

Following WDNR approval, targeted control for E/HWM took place throughout a large portion of the western basin with scattered areas in the eastern basin. Work completed in 2023 was focused to control a large-scale population of a tough strain of E/HWM with follow-up monitoring and planning completed in 2024. In late 2022 the Association applied for and received a WDNR AIS control grant for actions covered in this report.

2023 MANAGEMENT ACTIONS

After management discussion between the PLPOA, WDNR, and Wisconsin Lake & Pond Resources representatives a plan of action was formulated. Actions included a targeted, selective control for the entire population of E/HWM, treatment area monitoring, herbicide residual sampling, and post-treatment survey. In the entire western basin, a modified whole-lake point intercept (PI) survey was used to monitor pre- and post-treatment results while the a select area in the eastern basin used a sub-set PI survey for monitoring. In addition, residual herbicide monitoring was completed in four locations at up to 7-days post-treatment. The pre-treatment PI was completed in 2023 and

compared with the 2024 data to update current conditions, further map areas of AIS growth, review results from the 2023 control applications, and plan for 2025.

E/HWM CONTROL

Prior to targeted control and herbicide application, an AIS mapping survey was completed throughout the entire lake. The survey was completed using modified PI surveys as described above along with a meander method throughout the entire lake to verify the presence and density of AIS, primarily E/HWM. Each location was fully assessed with rake throws and visual observations to verify the presence and/or density of all species present. All locations of E/HWM were recorded on a GPS for mapping (Figure 1).

A WDNR aquatic herbicide permit was applied for and approved to control areas of E/HWM growth. The aquatic herbicide ProcellaCOR EC (active ingredient florpyrauxifen-benzyl) was permitted for use within target areas. Application for control of E/HWM was completed on June 19, 2023. The approved permit and treatment records are attached. Application rates of ProcellaCOR EC were dosed individually to each treatment area and ranged from 4-6 PDU/ac-ft to control 11.76 acres of E/HWM growth (Figure 1).

Residual monitoring of herbicide levels was done in conjunction with the ProcellaCOR EC application for four areas in Pine Lake. Volunteers from the PLPOA collected water samples at set locations and time intervals for up to 7-days post-treatment. Samples were collected at four evenly distributed locations throughout the lake and included two within direct treatment areas and two outside of treatment areas (Figure 2). Results will be used to further understand longevity and movement of ProcellaCOR EC by the WDNR.

For all location samples were collected at the following intervals after application: 3-hrs and 9-hrs, then 1, 2, and 7 days after application. All samples were sent to EPL Bio Analytical Services labs for testing. Recommended label application rates of ProcellaCOR EC for control of E/HWM are 2-5 PDU/ac-ft (3.9 – 9.6 PPB), though higher rates may be used in certain situations. Application rate of ProcellaCOR EC within Pine Lake treatment areas ranged from 7.7 PPB to 11.5 PPB (4-6 PDU/ac-ft) whole-lake. Residual sampling results showed that ProcellaCOR EC quickly dissipated to less than 3% of the initial application rate concentration in all areas by 24-hours after treatment (HAT) and was essentially found by 2-days after treatment. All residual sampling results are included below.

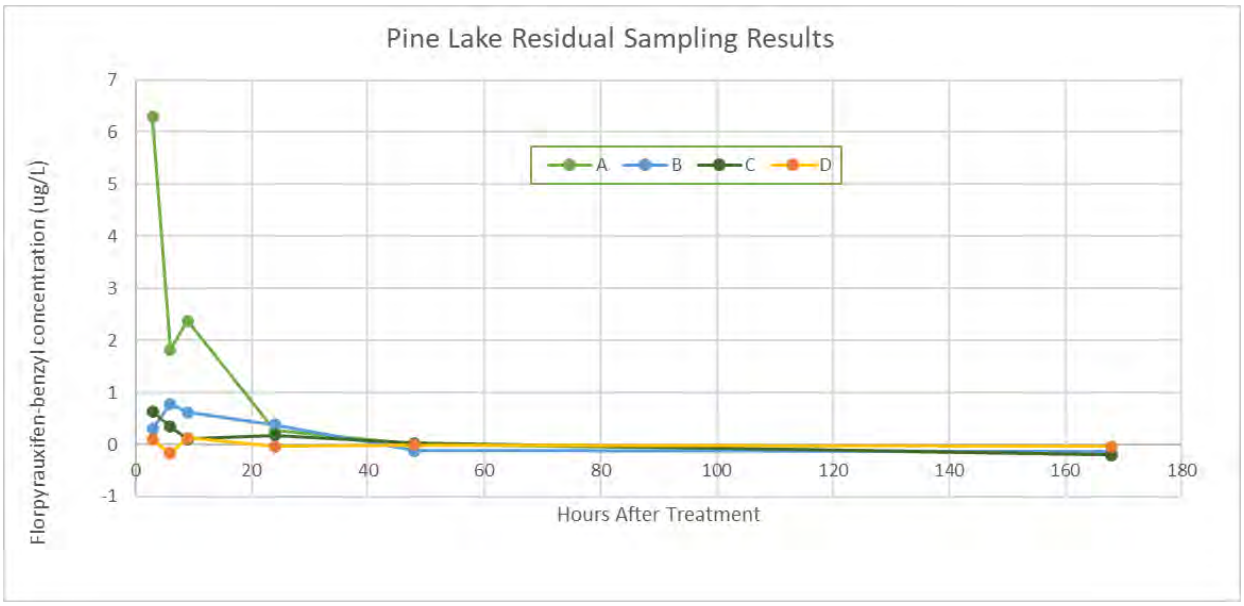
ProcellaCOR EC residual monitoring results - ng/mL. Pine Lake, Waushara County, WI.

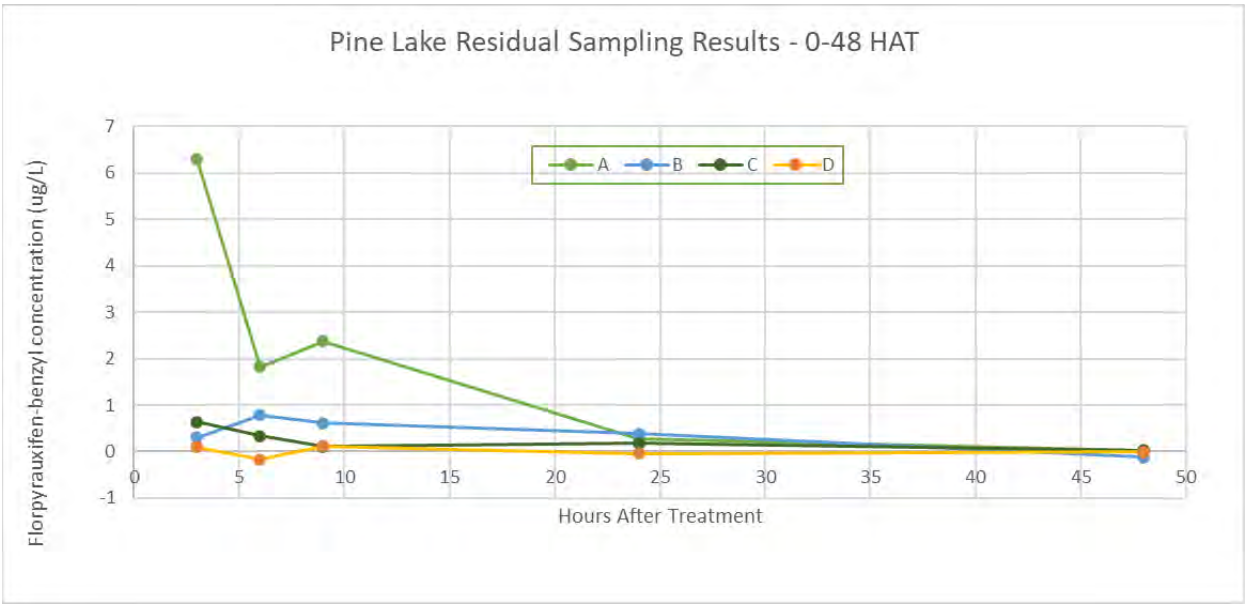
HAT	DAT	A	B	C	D
3	0	6.292792793	0.304054054	0.641891892	0.096846847
6	0	1.826576577	0.781531532	0.342342342	-0.168918919
9	1	2.371621622	0.619369369	0.11036036	0.123873874
24	2	0.268018018	0.385135135	0.177927928	-0.038288288
48	4	0.015765766	-0.119369369	0.024774775	-0.009009009
168	7	-0.20045045	-0.135135135	-0.20045045	-0.033783784

1 ng/ml = 1 ppb = 1 ug/L

HAT = Hours After Treatment

DAT = Days After Treatment





E/HWM TREATMENT AREA MONITORING

The western half of the whole-lake point intercept grid and a sub-set point intercept survey in Area F were used to gauge control and also for impact to non-target native species. Within the study areas, a set of sample points is established across the target areas at evenly spaced intervals. These sample points are then sampled before and after herbicide application to assess plant community response. Point intercept locations were established throughout Pine Lake and included sampling at the same locations in 2023 pre-treatment and 2024 post-treatment (Figures 3-4).

In the western basin, 174 individual locations were used from the already-established whole-lake point intercept grid and spaced on a 32-meter grid. Within E/HWM treatment Area F a sub-set of sample

points was created. Points were created and logged on the water during the 2023 pre-treatment survey and established as a best-fit to be within or immediately adjacent to treatment Area F. All pre-treatment surveys were completed on June 16, 2023, while the post-treatment surveys were completed one-year post treatment on June 26, 2024.

Latitude and longitude coordinates and sample identifications were assigned to each intercept point. Geographic coordinates were uploaded into a global positioning system (GPS) receiver. The GPS unit was then used to navigate to intercept points. At each intercept point, plants were collected by either tossing a specialized rake on a rope in depths 15' or greater or by using a specialized rake on a pole in depths less than 15' by dragging the rake along the bottom sediments. All collected plants were identified to the lowest practicable taxonomic level (e.g., typically genus or species) and recorded on field data sheets. Visual observations of aquatic plants were also recorded. Water depth and, when detectable, sediment types at each intercept point were also recorded on field data sheets.

To assess changes between pre- and post-treatment surveys statistical analysis was completed using a Chi-square test with a 5% Type-I error rate. This error rate is standard in ecological studies and equals that there is a 5% chance of claiming statistically significant change when no real change occurred. Only those species that display a p-value of 0.05 or lower changed significantly population-wise between sampling events. To calculate these values, the total number of sample locations each species was found at is compared between surveys. Tables 5 and 10 displays statistical changes, if any, for each species sampled with the sample grids.

Pine Lake – Western Basin – Figures 3A & 3B, Tables 1-5: The western basin of Pine Lake contained treatment areas G-O for a total control area of 8.49 acres. Control of E/HWM was excellent within the western basin and a significant reduction noted. E/HWM was found at 17.3% of sample points during the pre-treatment survey and at an average rake density of 1.48. Within sites N and O, E/HWM was mapped as highly dominant and surface matted. In sites G, H, K, L, M, and P E/HWM was moderately dominant and still formed dense stands. Control resulted in a statistically significant reduction of E/HWM across the entire western basin.

During the surveys, 11 species, including one non-native invasive, were identified pre-treatment while 10 species, only one non-native, were identified post-treatment. A slight change in overall species composition was noted between events. Overall diversity remained stable. Total native species found per vegetated sample site increased from 1.53 per site pre-treatment to 1.91 post-treatment (Table 1). Frequency of occurrence between sampling events for all species is included in Table 2 and shown below.

Table 1: Aquatic Plant Community Statistics. Pine Lake - west half, Waushara Co, WI.

	2023 - Pre-treatment	2024 - Post-treatment
Total number of sites visited	170	172
Total number of sites with vegetation	137	144
Total number of sites shallower than maximum depth of plants	168	172
Frequency of occurrence at sites within photic zone (%)	81.6%	83.7%
Simpson Diversity Index	0.83	0.85
Maximum Depth of Plants (Feet)	17.5	18
Taxonomic Richness (Number Taxa - includes visuals)	11	10
Average Number of Species per Site (within photic zone)	1.42	1.64
Average Number of Species per Site (sites with vegetation)	1.47	1.96
Average Number of Native Species per Site (within photic zone)	1.23	1.6
Average Number of Native Species per Site (sites with vegetation	1.53	1.91

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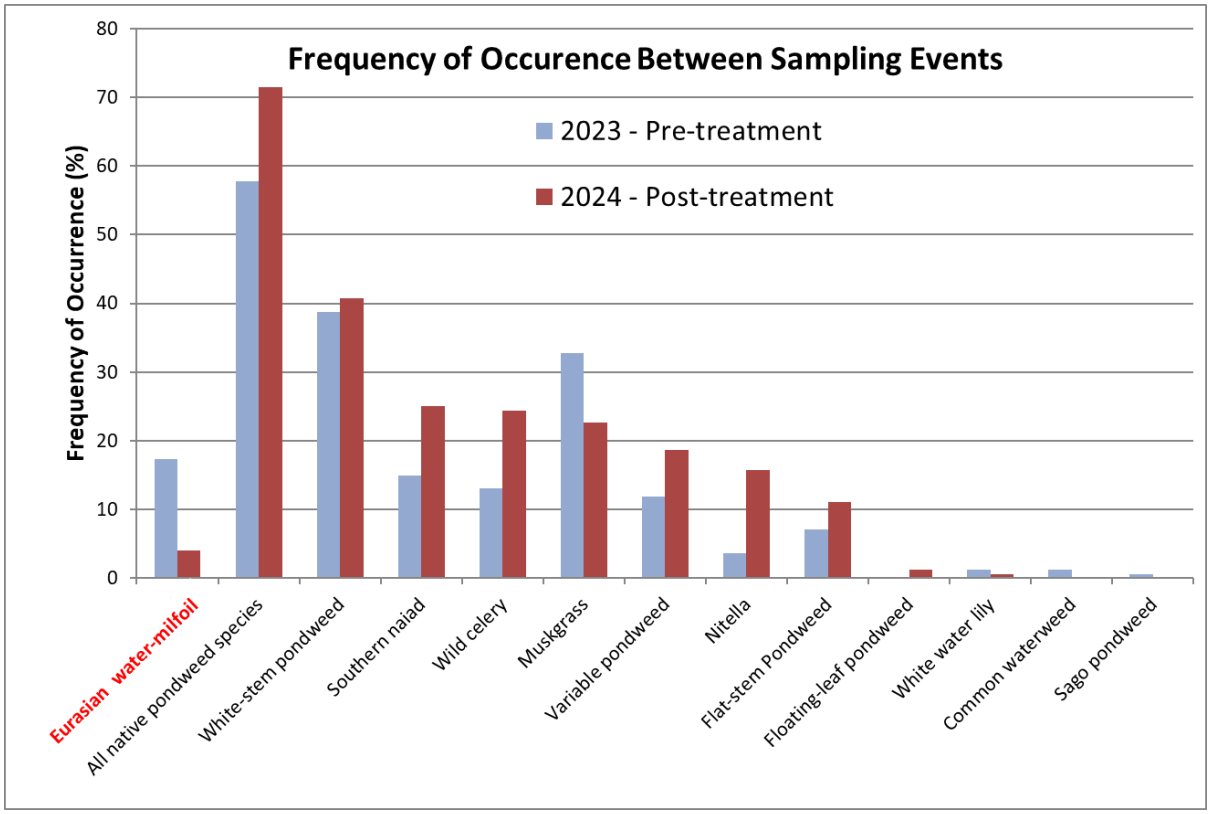


Non-target impact from the ProcellaCOR EC application appears minimal in the western basin (Table 5). Two species showed a statistically significant decline between sampling events: E/HWM (target species) and muskgrass. Conversely, three species saw a statistically significant increase after treatment: southern naiad, nitella, and wild celery. In addition, native pondweeds saw a statistically significant increase. Reduction of muskgrass is not due to the non-target impacts of the ProcellaCOR EC application. Muskgrass is a macro-algae and not listed as susceptible to ProcellaCOR EC on the product's label. Nitella, also a macro-algae and closely related to muskgrass, saw a significant increase after ProcellaCOR EC application.

Table 5: Statistical Significance of Species Between Sampling Events. Pine Lake - west half, Waushara Co., WI

Species	2024 vs 2023		
	P-value	Significance	+ / -
Eurasian water-milfoil	**7.7299E-05**	***	-
Muskgrass	**0.038046161**	*	-
Common waterweed	0.151236456	n.s.	-
Southern naiad	**0.019692075**	*	+
Nitella	**0.000159219**	***	+
White water lily	0.548224028	n.s.	-
Variable pondweed	0.08615427	n.s.	+
Floating-leaf pondweed	0.160974527	n.s.	+
White-stem pondweed	0.705292861	n.s.	+
Flat-stem Pondweed	0.211236892	n.s.	+
Sago pondweed	0.310904466	n.s.	-
Wild celery	**0.007574284**	**	+
All native pondweed species	**0.007882492**	**	+

* - somewhat significant change, ** - moderatly significant change, *** - very significant change

n.s. - Change not significant

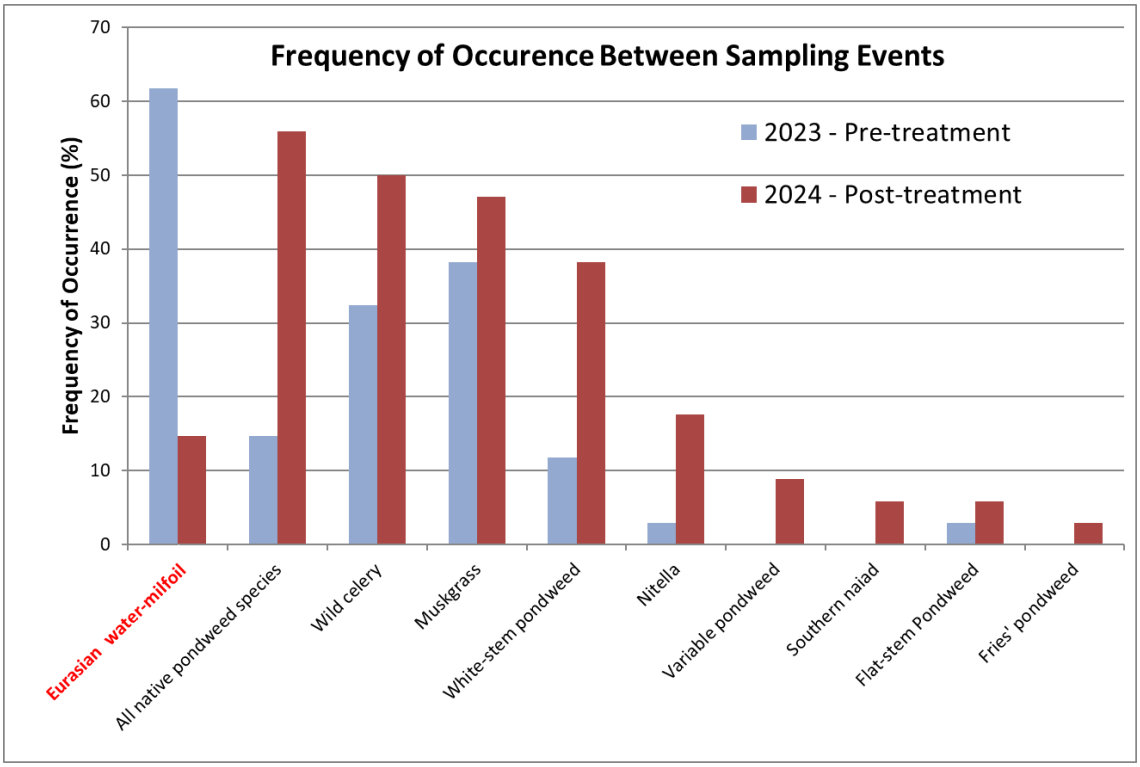
--- - Species was not sampled in both comparison years

Pine Lake – Area F – Figure 4, Tables 6-10: The eastern basin of Pine Lake is much deeper with a smaller percentage of littoral zone. Populations of E/HWM in this basin were often in much smaller and narrow areas. These small areas make it difficult to have an adequate amount of sample points within them to assess changes in species occurrences. Area F was chosen as it was large and uniform in size, allowing for better placement of sub-set sample locations. Control of E/HWM was excellent within Area F and a significant reduction noted. E/HWM was found at 61.8% of sample points during the pre-treatment survey and at an average rake density of 1.57.

Six species, including one non-native invasive, were identified pre-treatment while nine species, only one non-native, were identified post-treatment. A slight change in overall species composition was noted between events. Overall diversity increased by three native species. Total native species found per vegetated sample site increased from 1.00 per site pre-treatment to 1.88 post-treatment (Table 6). Frequency of occurrence between sampling events for all species is included in Table 2 and shown below.

Table 6: Aquatic Plant Community Statistics. Sub-set PI - Area F, Pine Lk, Waushara Co, WI.

	2023 - Pre-treatment	2024 - Post-treatment
Total number of sites visited	34	34
Total number of sites with vegetation	30	32
Total number of sites shallower than maximum depth of plants	34	34
Frequency of occurrence at sites within photic zone (%)	88.2%	94.1%
Simpson Diversity Index	0.71	0.81
Maximum Depth of Plants (Feet)	18	18
Taxonomic Richness (Number Taxa - includes visuals)	6	9
Average Number of Species per Site (within photic zone)	1.5	1.91
Average Number of Species per Site (sites with vegetation)	1.7	2.03
Average Number of Native Species per Site (within photic zone)	0.88	1.76
Average Number of Native Species per Site (sites with vegetation	1	1.88



Similar to the western basin, non-target impact from the ProcellaCOR EC application appears minimal in Area F (Table 10). Only one species showed a statistically significant decline between sampling events: E/HWM (target species). Conversely, two species saw a statistically significant increase after E/HWM reduction: nitella and white-stem pondweed. In addition, native pondweeds saw a statistically significant increase.

Table 10: Statistical Significance of Species Between Sampling Events. Sub-set PI - Area F, Pine Lk, Waushara Co.,

Species	2024 vs 2023		
	P-value	Significance	+ / -
Eurasian water-milfoil	**6.53342E-05**	***	-
Muskgrass	0.461971391	n.s.	+
Southern naiad	0.151150043	n.s.	+
Nitella	**0.046009008**	*	+
Fries' pondweed	0.313725757	n.s.	+
Variable pondweed	0.076465904	n.s.	+
White-stem pondweed	**0.011718686**	*	+
Flat-stem Pondweed	0.302645685	n.s.	+
Wild celery	0.139296428	n.s.	+
All native pondweed species	**0.000161551**	***	+

* - somewhat significant change, ** - moderatly significant change, *** - very significant change

n.s. - Change not significant

--- - Species was not sampled in both comparison years

After successful control in 2023 native species were able to quickly rebound without a noted non-target impact from the application. An aquatic plant community is dynamic and will see changes in species from year to year under natural conditions. In light of the recent AIS control, a reduction of E/HWM allowed for an increase in native plant populations and distribution, overall species diversity, and increased evenness in distribution of all species present as noted in the increased SDI.

Floristic Quality Index

Higher FQI numbers indicate higher floristic quality and biological integrity and a lower level of disturbance impacts. FQI varies around the state of Wisconsin and ranges from 3.0 to 44.6 with the average FQI of 22.2 (WDNR, 2005). Calculation allows for the comparison of waterbodies to one another within the same eco-region of the State. Pine Lake lies within the Northcentral Hardwood Forests eco-region.

Lakes within the Northcentral Hardwood Forests are typically natural lakes that vary from natural conditions to at least moderately developed shorelines. Increased development around the lake and overall use of these lakes leads to more disturbance from an expected natural condition, which leads to lower plant community metrics like FQI and coefficient of conservatism.

Aquatic plant communities are impacted slightly by this level of nearshore development, with both the average Coefficient and FQI for lakes within the region below State averages, showing a more disturbed community. From past whole-lake aquatic plant surveys in Pine Lake, average coefficient (6.2) and FQI (25.22) are above the upper quartile for the eco-region and above the State average. These indicate a plant community associated with below average disturbance levels and of good quality. Since the pre- and post-treatment surveys were sampled only portions of the lake their respective floristic indicators are expected to be below those found during the most recent, whole-lake survey from 2020. However, we can still use these indicators to further assess and track the response of the aquatic community to management. Table 3 and 8 displays aquatic community indicators for Pine Lake in the western basin and Area F pre and post-treatment compared to eco-region and all Wisconsin lakes.

Table 3: FQI and Average Coefficient of Pine Lake, west half, Compared to Wisconsin North Central Hardwoods Forests

	Avg. Coefficient of Conservatism			Floristic Quality			Total Species		
Quartile*	Lower	Median	Upper	Lower	Median	Upper	Lower	Median	Upper
Wisconsin Lakes	5.5	6	6.9	16.9	22.2	27.5	8	13	20
North Central Hardwoods Forests	5.2	5.6	5.8	17	20.9	24.4	10	14	19
2024 - post-treatment	6.67			20			10		
2023 - pre-treatment	6.10			19.29			11		

Table 8: FQI and Average Coefficient of Sub-set PI - Area F, Pine Lk, Compared to Wisconsin North Central Hardwoods Forests

	Avg. Coefficient of Conservatism			Floristic Quality			Total Species		
Quartile*	Lower	Median	Upper	Lower	Median	Upper	Lower	Median	Upper
Wisconsin Lakes	5.5	6	6.9	16.9	22.2	27.5	8	13	20
North Central Hardwoods Forests	5.2	5.6	5.8	17	20.9	24.4	10	14	19
2024 - post-treatment	7.13			20.15			9		
2023 - pre-treatment	6.80			15.21			6		

The FQI calculated from the pre- and post-treatment data for each survey increased after the ProcellaCOR EC application. Even for small areas, the FQI was relatively high post-treatment at 20 for the western basin and 20.15 with Area F. Along with an increase in FQI, the average coefficient increased for both sample sets as well from pre-treatment to post-treatment. These values further display that the ProcellaCOR EC application had no discernable non-target impact on native species while being highly selective in controlling the target species E/HWM. Tables 4 and 9 display the expanded breakdown of FQI by species.

2024 Aquatic Invasive Species Mapping

E/HWM populations in Pine Lake were found at an all-time high in 2023 at 11.76 acres. The 2023 targeted ProcellaCOR EC application resulted in a substantially significant reduction of E/HWM. Minimal E/HWM was noted during the 2024 post-treatment surveys. Hybrid Eurasian water-milfoil has a history of being the most impactful AIS in Pine Lake and has required past management at up to large-scale levels. E/HWM is also the species of most concern by lake residents. To further document E/HWM populations and assist in management planning a late-summer AIS mapping survey was conducted on September 23, 2024. The 2024 survey identified EWM growing at various densities and distribution in the survey locations. The following densities were used to describe the EWM populations:

1. **Spots** – small locations of individual plants or clumps that were not large enough to map around their perimeter.
2. **Scattered** – locations of EWM that had plants close enough to map as an area but were still widely scattered. EWM is merely present and not a large component of the biomass.
3. **Low** – EWM identified in distinct beds. While individual plants or clumps may reach the surface, most are lower growing or not as dense, often mixed with other vegetation.
4. **Moderate** – EWM occupies over half the water column with many plants or clumps at or just below the surface. Few other plant species were found.
5. **High** – locations of EWM that were at or near the surface and occupied much of the water column. EWM may be the only plant found growing in these locations.

During the final, 2024 mapping survey E/HWM was mostly contained in the western basin. Within the densest areas E/HWM was found as widely scattered beds growing at low to moderate densities in depths of 8-12 ft with the largest bed along the northwest portion of the deeper, west-basin bowl. Here, E/HWM was noted growing in low to moderate dense beds. Individual spots within this area were close to a high-density rating, but did not quite reach the surface to meet the requirement for "high." In the eastern basin very little E/HWM was mapped. When found, it was noted as individual plants or a small, widely scattered bed along the eastern shoreline. Total E/HWM mapped during the 2024 survey was 1.045 acres (Figure 5).

The current spread of EWM in the lake has been significantly reduced. In the western basin the largest bed contains a population that should be managed in 2025 to prevent re-infestation to other areas of the lake. Small-scale management should occur to reduce the chance of a large-scale repopulation. Care must be taken in choosing a management approach that will be successful while also limiting non-target impacts.

2025 MANAGEMENT RECCOMENDATIONS

The PLPOA has completed successfully HWM control in 2023. Significantly reduced populations of E/HWM were identified during 2024 year-end survey. Future management may be necessary to keep non-native species at tolerable levels and limit its impact to lake health and use. Some key takeaways from the 2023-24 management include the following:

- The 2023 targeted ProcellaCOR EC application was extremely successful in controlling E/HWM while limiting non-target impacts.
- Populations of E/HWM are significantly decreased across the lake from 2023.
- Hybrid water-milfoil still exists in scattered areas around the lake with one small bed of low to moderate density.
- Pine Lake's native aquatic plant community increased in health and showed no impact from the HWM control actions.
- Continued management and monitoring for E/HWM and other AIS should occur.

NEXT STEPS

Current DNR recommendations for control of AIS include the use of an integrated pest management approach (IPM). The use of IPM includes changing methods of control, including, but not limited to varying herbicide active ingredients, mechanical harvesting, hand or suction harvesting, and no-action. Past and current surveys and management for Pine Lake have shown that E/HWM can occupy large colonies and require management up to large-scale management.

It is important that appropriate management actions continue as needed on a targeted basis to ensure that nuisance invasive aquatic plant growth does not reach unmanageable levels. Care must be taken in planning to maintain the native community for the health of the lake while controlling and reducing the spread of E/HWM.

AIS have the biggest impact on a lake's ecosystem and should be the main target for active management. The current population of E/HWM within the lake was noted as scattered with only one bed of large enough size and dense enough growth to require active management. Complete removal of EWM from the system is unlikely and current populations, though high in abundance, are also low in density throughout many areas. Going into 2025, there are two potential management options for the E/HWM within the lake:

1. **No active management:** Currently, E/HWM was found at 1.05 acres (Figure 5). Historical surveys show E/HWM significantly reduced from 2023 levels. Even with the reduction, it is expected that E/HWM will continue to increase in density during a year of no management, especially in locations currently mapped as low or scattered density. Potentially delaying control, however, may benefit the Association. It will allow for increased funds and planning. However, future control will be more costly due to increased EWM and product application pricing.

2. **Spot-management of densest areas of EWM control:** Many locations of EWM growth are found as individual spots/clumps or as narrow, low-density beds. Control of only the densest areas may allow for relief of nuisance for lake users and reduce the need for future management. Targeted management with Diver Assisted Suction Harvesting (DASH) or chemical applications with fast-acting ingredients, such as florpyrauxifen-benzyl (ProcellaCOR EC) are potential options, depending on budget. At the current size and depth

of infestation, DASH may be prohibitively expensive and time consuming. Spot-management can significantly reduce the overall EWM population and reduce the future need for potential whole-lake control.

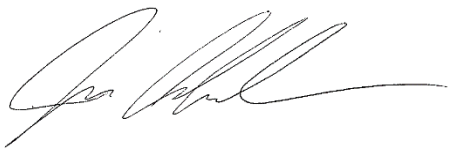
The current E/HWM infestation covers 1.05 acres. Most of the E/HWM population is noted as one larger, distinct beds of low to moderate density with another nearby bed of scattered density in the western basin. In order to achieve desired control, it is recommended to combine these two beds into a single E/HWM management area of 1.36 acres for 2025 (Figure 6). This allows for the proper contact and retention time of selected products to achieve control. This area is recommended for control in 2025 with a fast-acting, selective chemical application with a highly targeted approach using ProcellaCOR EC to reduce impacts to non-target species. Any control should be coupled with continued monitoring and planning for 2026. For 2025 management, we recommend the following course of action:

- **February, 2025**: Apply for WDNR permit for up to 1.36 acres of E/HWM control (Figure 6)
- **May/June, 2025**: Herbicide application for E/HWM control using ProcellaCOR EC at 5-6 PDU/ac-ft.
- **Summer, 2025**: Targeted hand-harvesting of E/HWM by lakeshore residents in shallow, near-shore waters and continued boat landing monitoring.
- **Fall 2025**: Complete an assessment of 2025 control actions for 2026 planning.
    - Targeted AIS meander survey
    - Update management report and recommendations to the PLPOA. Future planning may involve any of the following actions:
        - Varying scale of AIS control in 2026
        - Continued monitoring
        - No action

If you have any questions, require any additional information, or would like a formal proposal on any of the above management options please contact us directly as follows:

Jim Scharl: (920) 872-2032 or jim@wisconsinlpr.com

Respectfully,



Appendix A

Supporting Aquatic Plant Survey Methods and Documentation

The point-intercept method was used to evaluate the existing emergent, submergent, floating-leaf, and free-floating aquatic plants. If a species was not collected at a specific point, the space on the datasheet was left blank. For the survey, the data for each sample point was entered into the WDNR "Worksheets" (i.e., a data-processing spreadsheet) to calculate the following statistics:

- **Taxonomic richness** - the total number of taxa detected.
- **Maximum depth of plant growth**
- **Community frequency of occurrence** - number of intercept points where aquatic plants were detected divided by the number of intercept points shallower than the maximum depth of plant growth.
- **Mean intercept point taxonomic richness** - the average number of taxa per intercept point.
- **Mean intercept point native taxonomic richness** - the average number of native taxa per intercept point.
- **Taxonomic frequency of occurrence within vegetated areas** - the number of intercept points where a particular taxon (e.g., genus, species, etc.) was detected divided by the total number of intercept points where vegetation was present.
- **Taxonomic frequency of occurrence at sites within the photic zone** - number of intercept points where a particular taxon was detected divided by the total number of points which are equal to or shallower than the maximum depth of plant growth.
- **Relative taxonomic frequency of occurrence** – the number of intercept points where a particular taxon was detected divided by the sum of all species' occurrences.
- **Mean density** - the sum density values for a particular species divided by the number of samplings sites.
- **Simpson Diversity Index (SDI**) - an indicator of aquatic plant community diversity. SDI is calculated by taking one minus the sum of the relative frequencies squared for each species present. Based upon the index of community diversity, the closer the SDI is to one, the greater the diversity within the population.
- **Floristic Quality Index (FQI)** - This method uses a predetermined Coefficient of Conservatism (C) that has been assigned to each native plant species in Wisconsin, based on that species' tolerance for disturbance. Non-native plants are not assigned conservatism coefficients. The aggregate conservatism of all the plants inhabiting a site determines its floristic quality. The mean C value for a given lake is the arithmetic mean of the coefficients of all native vascular plant species occurring on the entire site, without regard to dominance or frequency. The FQI value is the mean C times the square root of the total number of native species. This formula combines the conservatism of the species present, with a measure of the species richness of the site.

Appendix B

Tables

Table 2: Frequency of Occurrence of Aquatic Plant Species by Year. Pine Lake - west half, Waushara Co., WI

Species	Year Sampled	
	2023 - Pre-treatment	2024 - Post-treatment
Eurasian water-milfoil	17.26	4.07
Muskgrass	32.74	22.67
Common waterweed	1.19	---
Southern naiad	14.88	25.00
Nitella	3.57	15.70
White water lily	1.19	0.58
Variable pondweed	11.90	18.60
Floating-leaf pondweed	---	1.16
White-stem pondweed	38.69	40.70
Flat-stem Pondweed	7.14	11.05
Sago pondweed	0.60	---
Wild celery	13.10	24.42
All native pondweed species	57.73	71.51

* - recorded as visual only

--- - species not sampled

Table 4: FQI Breakdown by species for Pine Lake - west half, Waushara Co., WI

Common Name	2023 - pre-treatment	2024 - post-treatment
Muskgrass	7	7
Common waterweed	3	---
Southern naiad	8	8
Nitella	7	7
White water lily	6	6
Variable pondweed	7	7
Floating-leaf pondweed	---	5
White-stem pondweed	8	8
Flat-stem Pondweed	6	6
Sago pondweed	3	---
Wild celery	6	6
Total Species	10	9
Mean C	6.10	6.67
Floristic Quality Index (FQI)	**19.29**	**20.00**

Table 7: Frequency of Occurrence of Aquatic Plant Species by Year. Sub-set PI - Area F, Pine Lk, Waushara Co.,

Species	Year Sampled	
	2023 - Pre-treatment	2024 - Post-treatment
Eurasian water-milfoil	61.76	14.71
Muskgrass	38.24	47.06
Southern naiad	---	5.88
Nitella	2.94	17.65
Fries' pondweed	---	2.94
Variable pondweed	---	8.82
White-stem pondweed	11.76	38.24
Flat-stem Pondweed	2.94	5.88
Wild celery	32.35	50.00
All native pondweed species	14.70	55.88

* - recorded as visual only

--- - species not sampled

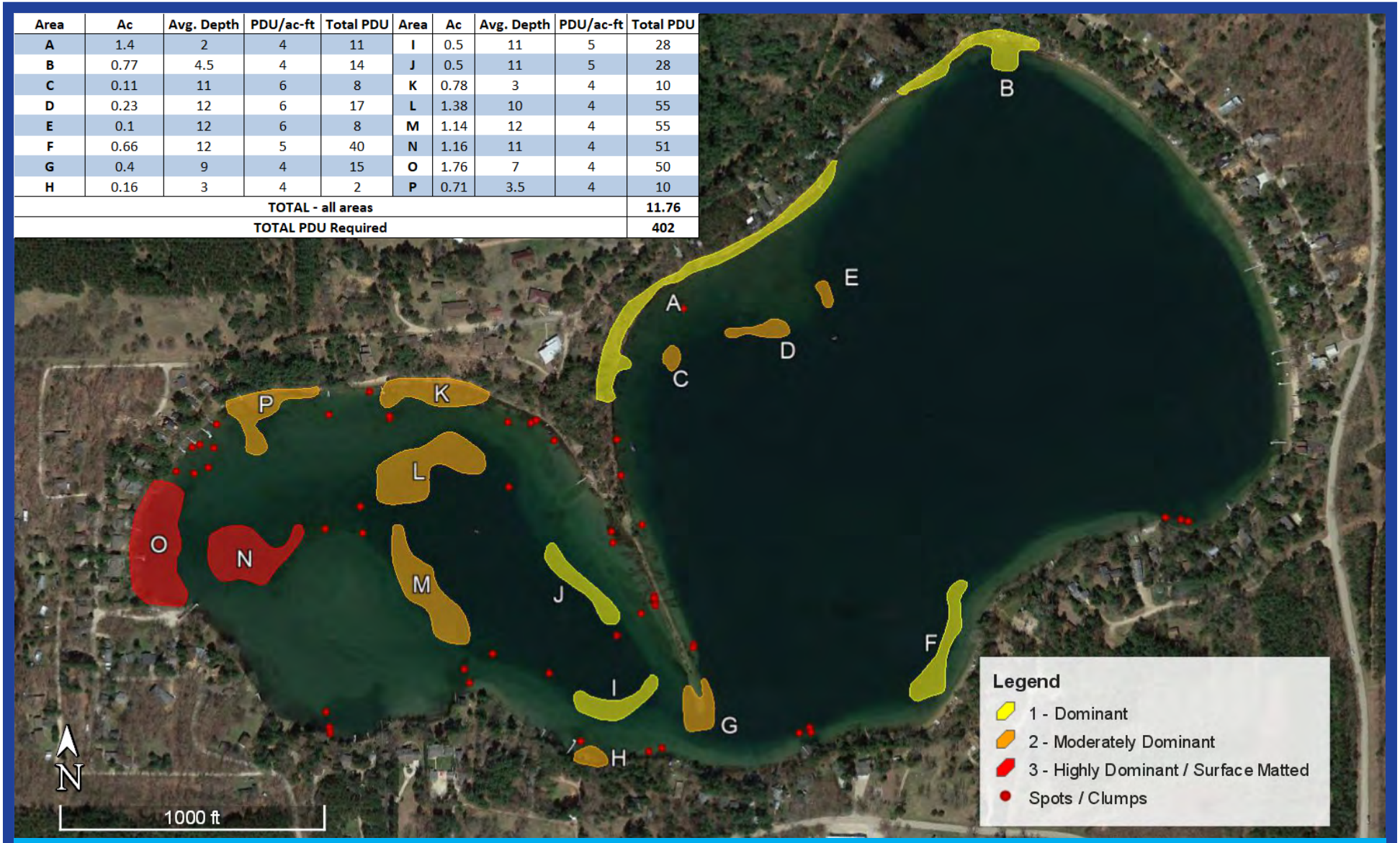
Table 9: FQI Breakdown by species for Sub-set PI - Area F, Pine Lk, Waushara Co., WI

Common Name	2023 - pre-treatment	2024 - post-treatment
Muskgrass	7	7
Southern naiad	---	8
Nitella	7	7
Fries' pondweed	---	8
Variable pondweed	---	7
White-stem pondweed	8	8
Flat-stem Pondweed	6	6
Wild celery	6	6
Total Species	5	8
Mean C	6.80	7.13
Floristic Quality Index (FQI)	**15.21**	**20.15**

Appendix C

Figures

Area	Ac	Avg. Depth	PDU/ac-ft	Total PDU	Area	Ac	Avg. Depth	PDU/ac-ft	Total PDU
A	1.4	2	4	11	I	0.5	11	5	28
B	0.77	4.5	4	14	J	0.5	11	5	28
C	0.11	11	6	8	K	0.78	3	4	10
D	0.23	12	6	17	L	1.38	10	4	55
E	0.1	12	6	8	M	1.14	12	4	55
F	0.66	12	5	40	N	1.16	11	4	51
G	0.4	9	4	15	O	1.76	7	4	50
H	0.16	3	4	2	P	0.71	3.5	4	10
TOTAL - all areas									11.76
TOTAL PDU Required									402

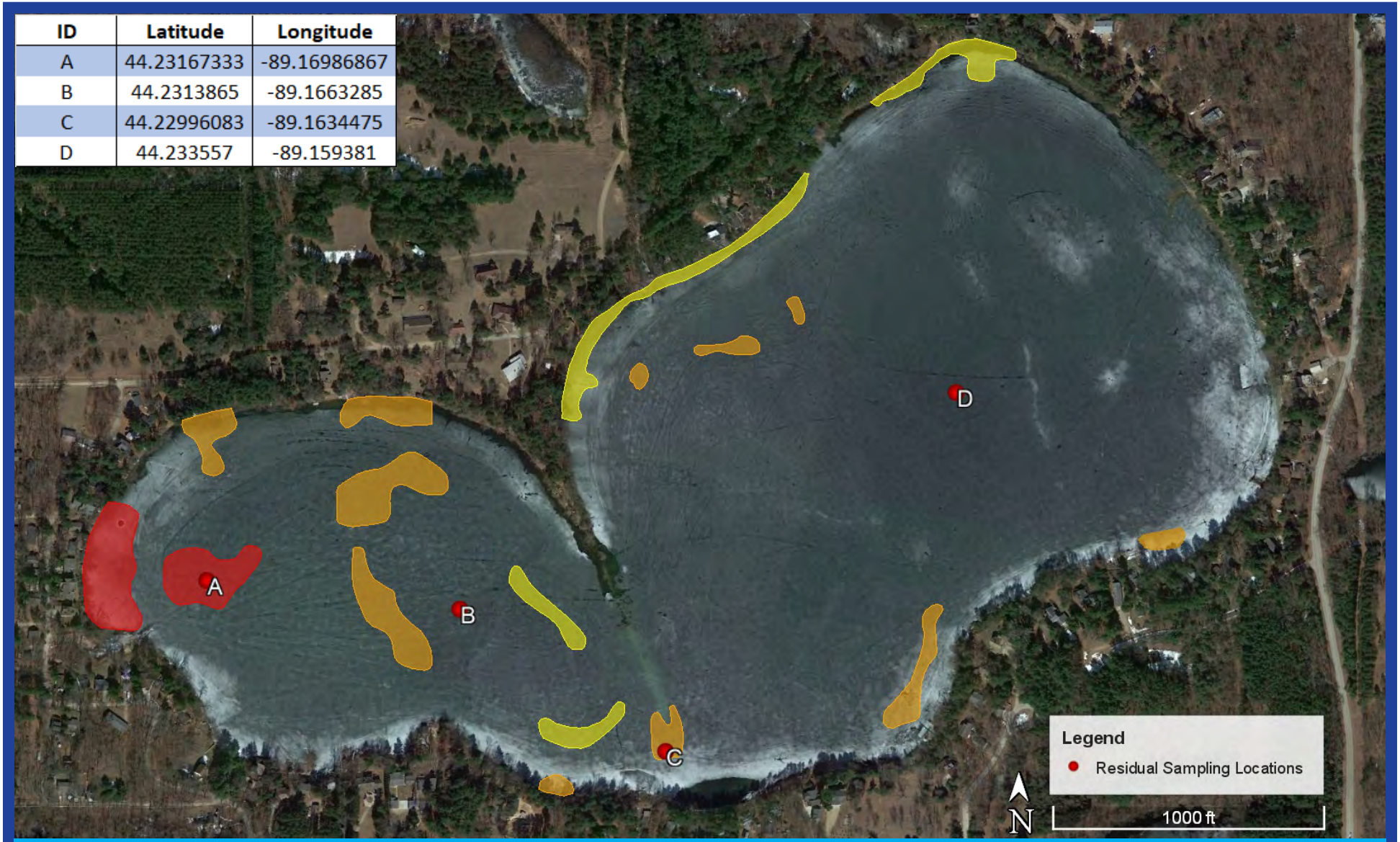


WISCONSIN
LAKE & POND RESOURCE

2023 Eurasian Water-Milfoil Locations

Fig 1
Pine Lake, Waushara
Co. Surveyed: 06/16/23

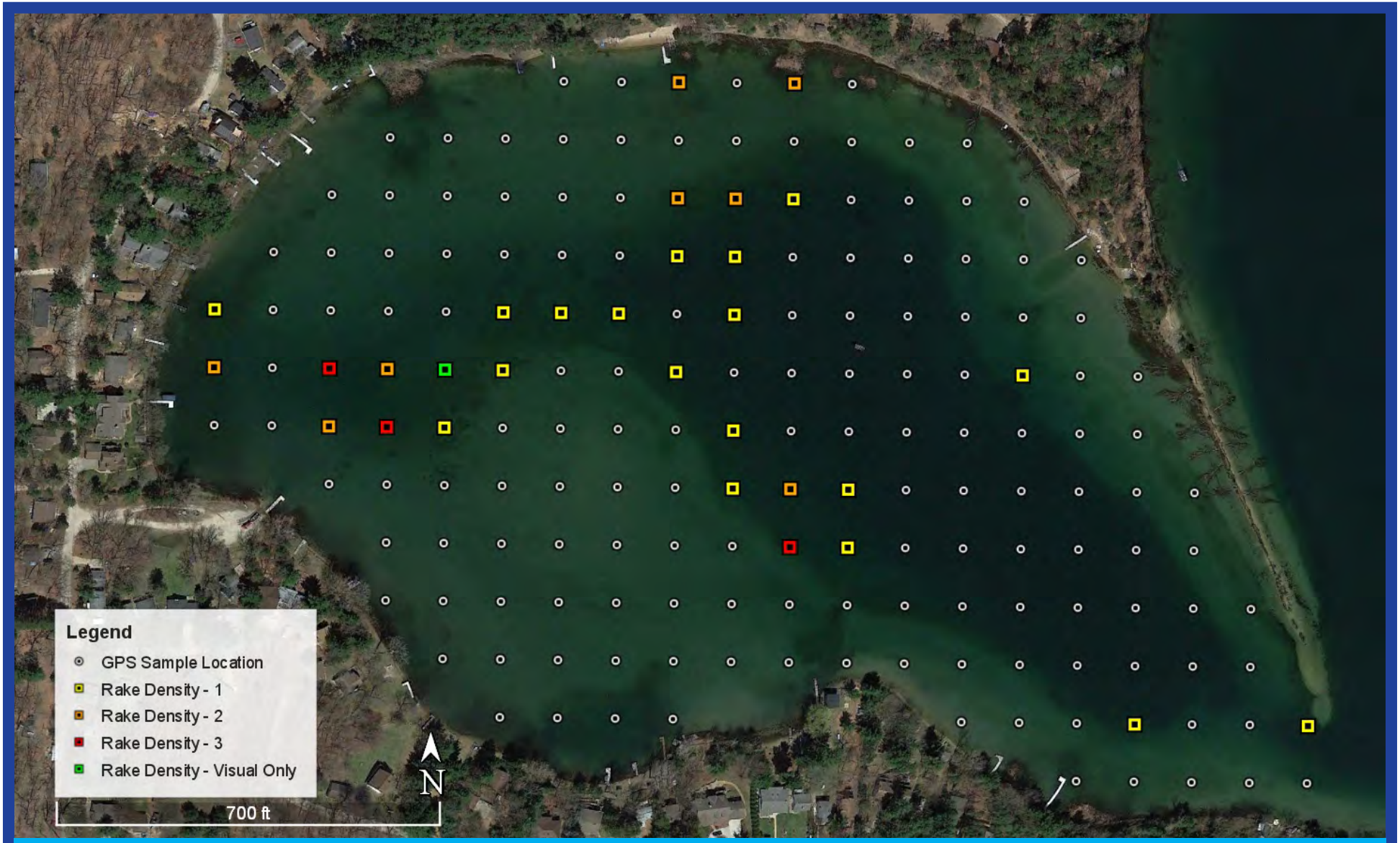
ID	Latitude	Longitude
A	44.23167333	-89.16986867
B	44.2313865	-89.1663285
C	44.22996083	-89.1634475
D	44.233557	-89.159381



WISCONSIN
LAKE & POND RESOURCE

2023 Eurasian Water-Milfoil Locations

Fig 2
Pine Lake
Waushara County

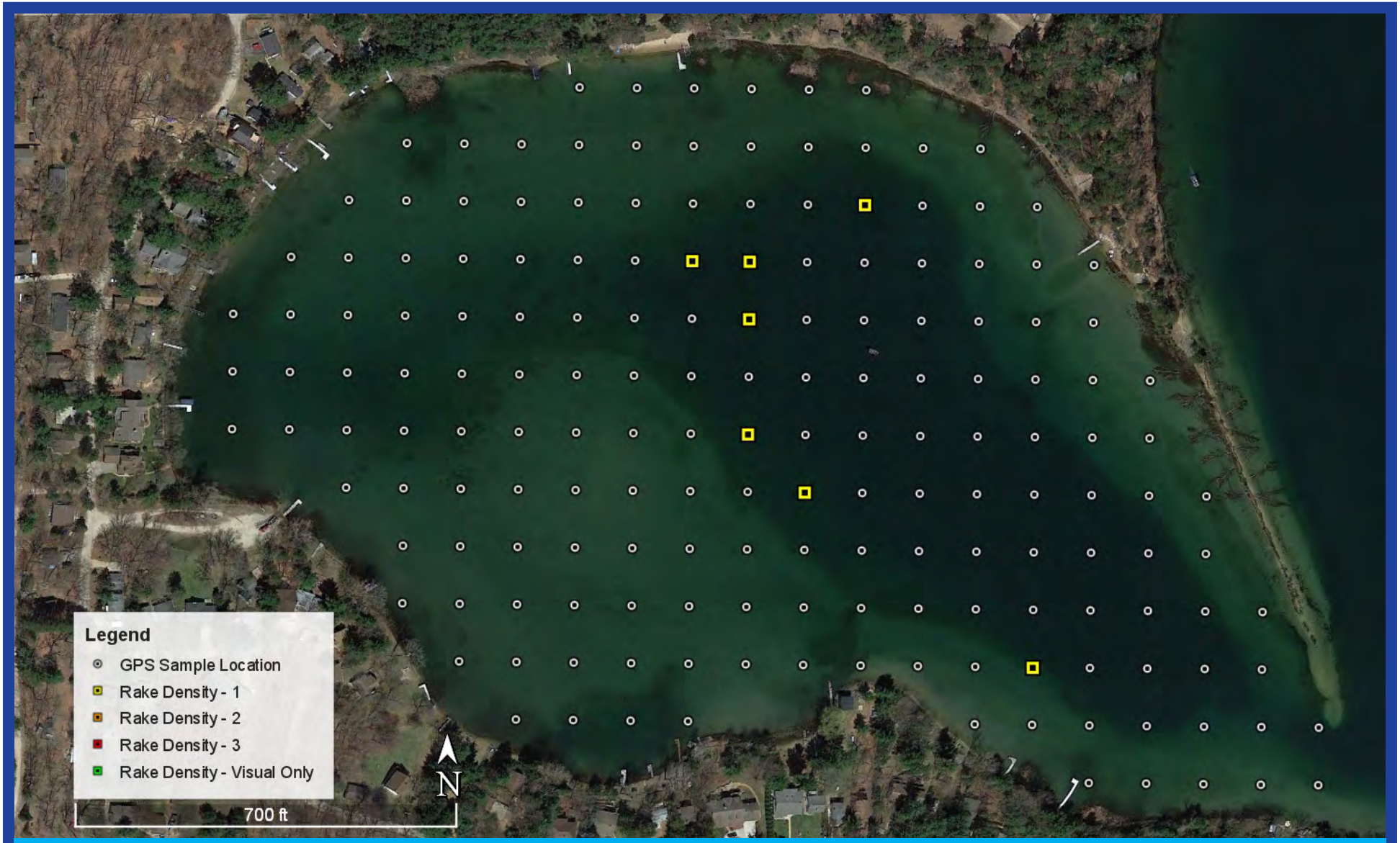


WISCONSIN
LAKE & POND RESOURCE

Pre-Treatment EWM Locations

Half-lake Point Intercept Survey

Fig 3A
Pine Lake, Waushara Co.
Surveyed: 06/16/23

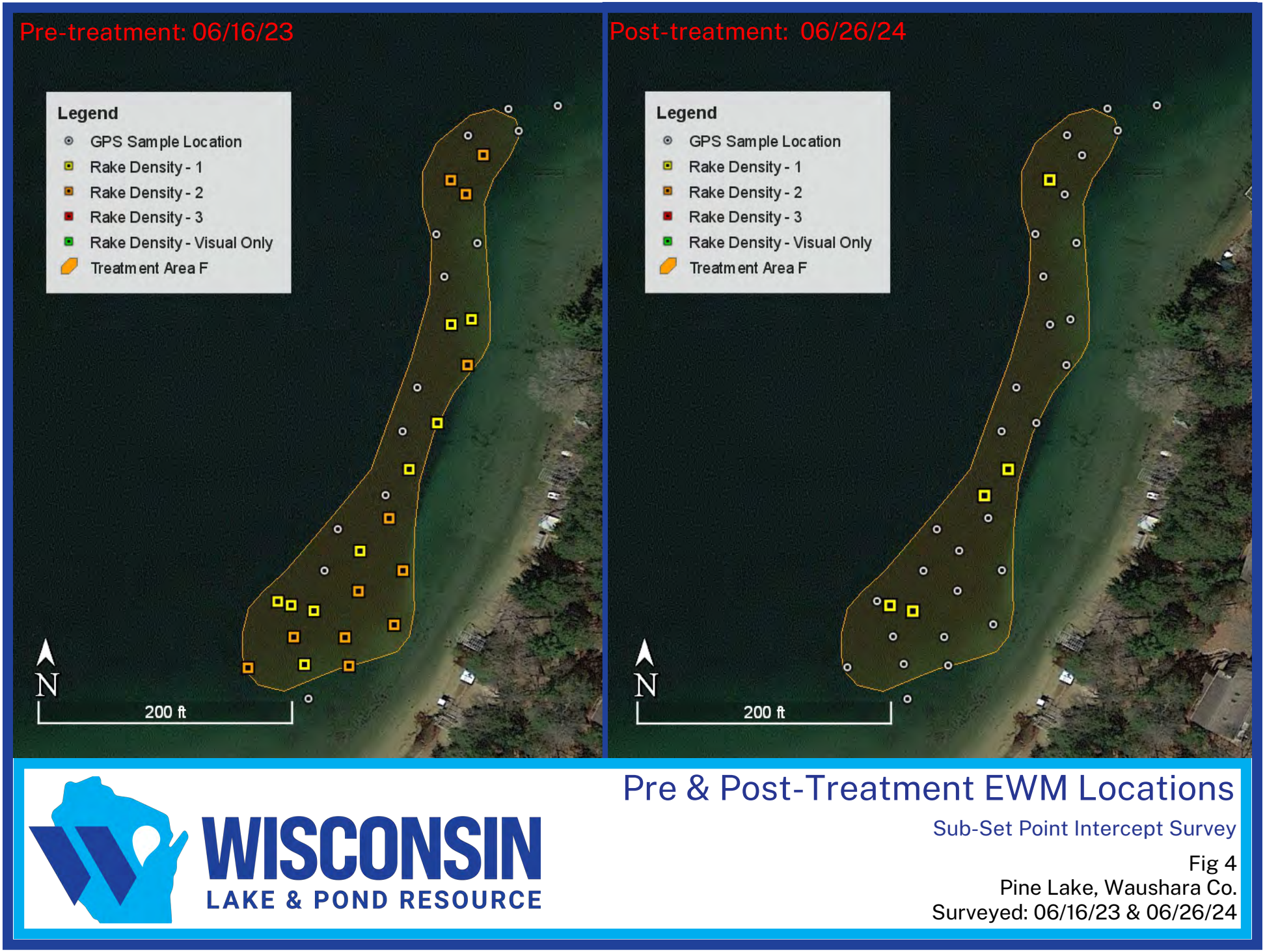


WISCONSIN
LAKE & POND RESOURCE

Post-Treatment EWM Locations

Half-lake Point Intercept Survey

Fig 3B
Pine Lake, Waushara Co.
Surveyed: 06/26/24



WISCONSIN
LAKE & POND RESOURCE

Pre & Post-Treatment EWM Locations

Sub-Set Point Intercept Survey

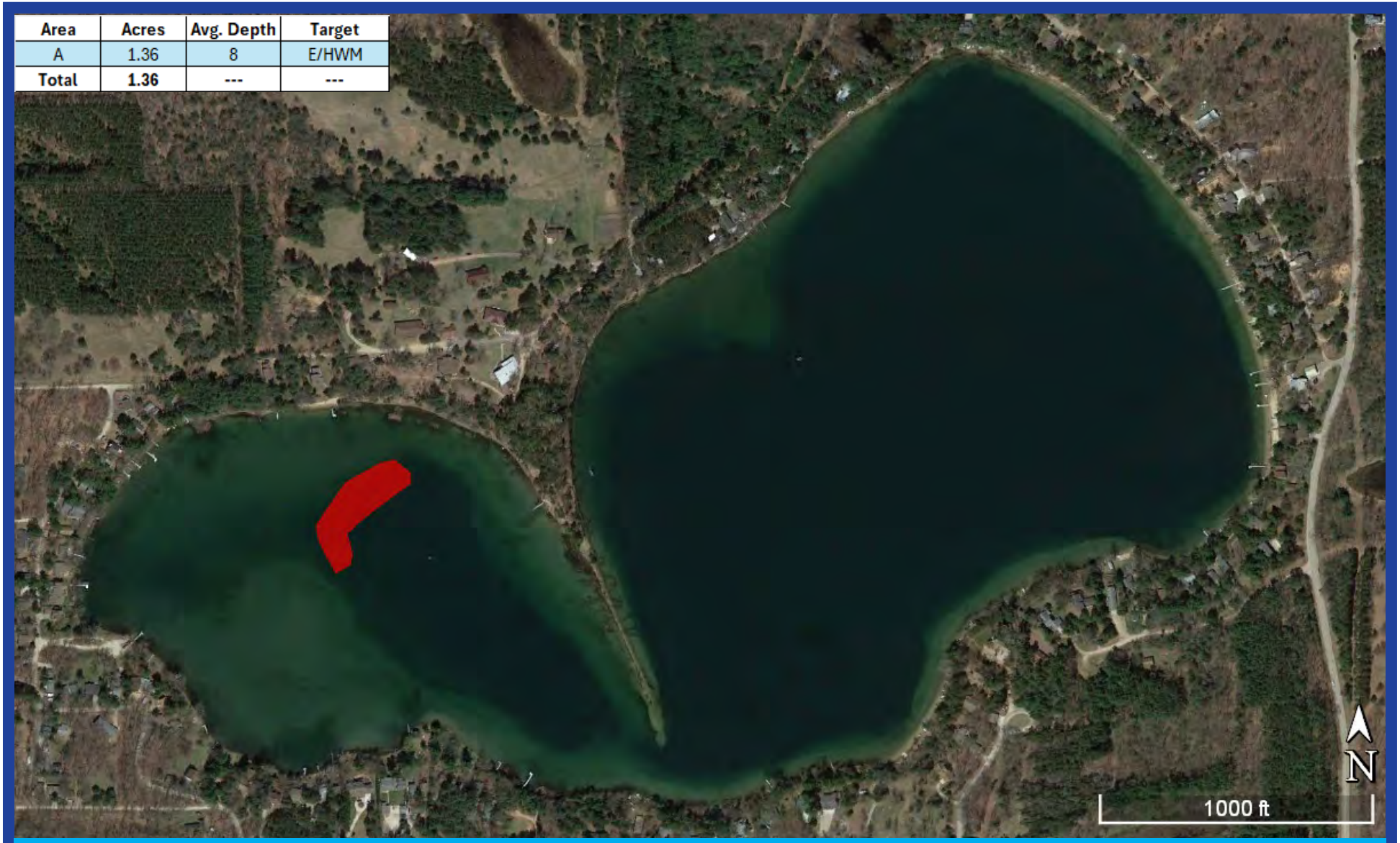
Fig 4
Pine Lake, Waushara Co.
Surveyed: 06/16/23 & 06/26/24

WISCONSIN
LAKE & POND RESOURCE

Eurasian Water-Milfoil Locations

Fig 5
Pine Lake, Waushara Co.
Surveyed: 09/23/24

Area	Acres	Avg. Depth	Target
A	1.36	8	E/HWM
Total	**1.36**	---	---



WISCONSIN
LAKE & POND RESOURCE

2025 Proposed EWM Management Area

Fig 6
Pine Lake, Waushara Co.
Surveyed: 09/23/24

Appendix D

2023 WDNR Herbicide Permit and Treatment Record

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Tony Evers, Governor
Adam N. Payne, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

State of Wisconsin DNR Department of Natural Resources Water Permit Central Intake – attn. APM PO Box 7185 Madison, WI 53707-7185	Chemical Aquatic Plant Control Permit

Permit Number: *NE-2023-70-17349*
Permit Expiration Date: *October 1, 2023*
Waterbody Name: *Pine Lake*

Waterbody # (WBIC): *196100*
Fee Received: *320*
Waterbody Address: *PO Box 45*

Applicant Name: *Pine Lake Property Owners Association*
PO Box 45
King, WI 54946
Email:
Phone:

Applicator Name: *Jones Fish Hatcheries and Distributors LLC, DBA Wisconsin Lake & Pond Resource, LLC*
N7828 Town Hall Rd
Eldorado, WI 54932
Email: *jim@wisconsinlpr.com*
Phone: *920-872-2032*

Advanced Notification of Treatment is required

The Department has received and reviewed your application to chemically treat up to 12.00 acres of Eurasian water milfoil in Pine Lake in Waushara County. Aspects of this permit may not be changed. Please go to this web address: https://permits.dnr.wi.gov/water/SitePages/Permit%20Search.aspx to search for and download the permit documents. Your permit application meets the minimum requirements by law and a permit is being issued with the following conditions.

- It is the responsibility of the applicant to follow the treatment plan outlined in the permit application and permit conditions. The treatment notification protocols, treatment plan, and reporting protocols shall be performed in compliance with Wisconsin Administrative Code Chapter NR 107. Noncompliance with the permit can result in enforcement actions under Wis. Stat. ss. 23.24(6) and 281.98 and restriction of aquatic plant management activities for subsequent years under Wis. Adm. Code Ch. NR 107. The conditions and treatment plan are required to be followed to ensure efficacy of the treatment.

- You shall notify Christopher Kolasinski of the Department of Natural Resources at Christopher.kolasinski@wisconsin.gov or 920-252-5053, at least 4 business days before treatment with the date and time of proposed treatment.

- The Department may stop or limit the application of chemicals to a body of water if at any time it determines that the treatment will be ineffective, or will result in unreasonable restrictions on current water uses, or will produce unnecessary adverse side effects on nontarget organisms.

- You shall have a paper or electronic copy of this cover letter and permit with the individual conducting the treatment.

- You shall submit the Aquatic Plant Management Treatment record on the most updated form supplied by the Department as follows:

    a. Immediately, if any unusual circumstances occur during treatment.
    b. Within 30 days, if treatment occurs.
    c. By October 1 of this year if no treatment occurred.

If you have any questions or concerns, I can be reached at 920-252-5053 or by email at Christopher.Kolasinski@wisconsin.gov

State of Wisconsin Department of Natural Resources for the Secretary

By: Kolasinski, Chris	5/24/2023	5/24/2023
Water Resources Biologist	Date Signed	Date Mailed

Please Note:
If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent. This notice is provided pursuant to s. 227.48(2), Wis. Stats. To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

Notice:

- You shall decontaminate all project equipment used in the waterbody to minimize transport of aquatic invasive species (AIS) immediately after each use on the project site. You shall utilize best management practices: https://dnr.wi.gov/topic/Invasives/disinfection.html You shall comply with all provisions in State Stat. s. 30.07 and Wis. Adm Code s. NR 40.07 and Manual code 9183.1 For further information, please refer to the following: https://dnr.wi.gov/topic/invasives/classification.html.

- The approval of an aquatic plant management permit does not represent an endorsement of the permitted activity but represents that the applicant has complied with all criteria of this chapter.

- You shall conduct pre- and post-sub-point intercept survey following DNR protocols. The data shall be entered into the aquatic plant survey spreadsheet associate with DNR monitoring protocols and sent to Ted Johnson after completion.

- You shall conduct herbicide concentration monitoring post treatment.

Aquatic Plant Management

NOTE: Missing or incomplete fields are highlighted at the bottom of each page. You may save, close and return to your draft permit as often as necessary to complete your application. If there are no updates in 90 days, your draft is deleted

This Application has been Signed and Submitted by: i:0#.f|wamsmembership|jscharl signed on 2023-05-02T12:13:57

Site or Project Name:	Pine Lake - 2023 EWM The permit application will be saved automatically with this name
Activity:	Chemical Control Application
Eligibility: (All questions must be no for it to be considered a private pond.)	**Does the waterbody have:** • More than one property owner? ◉ Yes ○ No • Uncontrolled surface water discharge? ◉ Yes ○ No • Public access? ◉ Yes ○ No

3200-004 Chemical Aquatic Control Application

NOTE: To be considered a private pond, a waterbody must meet all of the following requirements:

1. Confined to one property owner.
2. The pond has no uncontrolled surface water discharge.
3. No public access.

Upon submittal of your permit application, a **non-refundable $20 permit processing fee will be charged**. Additional acreage fees will be refunded if the permit request is denied or if no treatment occurs.

3200-004 Chemical Aquatic Plant Control Application

- Annually complete all pages on Form 3200-004 for chemical plant management applications. Complete form 3200-004a for large scale treatments(exceeds 10.0 acres in size or 10% of the area of the water body that is 10 feet or less in depth) as required by NR107.04(3).
  - Form 3200-004 is competed electronically through this system.
  - Form 3200-004a must be completed outside the system and uploaded to the attachments section. Please refer to this link for a copy of this form: http://dnr.wi.gov/files/pdf/forms/3200/3200-004A.pdf
- Attach a map that shows the treatment location(s), treatment dimensions and riparian landowners. If requesting WPDES coverage, attach a water body map that shows surface outflow and receiving waters.
- For a large-scale treatment, attach evidence that a public notice has been published in a regional / local newspaper and if required that a public informational meeting has been conducted as defined in NR107.04(3).
- Pay fee online.
- Sign and Submit form.
- A signed permit application certifies to the Department that a copy of the application has been provided to any affected property owner's association/district and to landowners adjacent to treatment area.

Contact Information

Applicant Information

Organization	Pine Lake Property Owners Association
Last Name:	
First Name:	
Mailing Address:	PO Box 45
City:	King
State:	WI
Zip Code:	54946
Email:	
Phone Number: (xxx-xxx-xxxx)	
Alternative Phone Number: (xxx-xxx-xxxx)	

Waterbody Address

Last Name:	
First Name:	
Street Address:	PO Box 45
City:	King
State:	WI
Zip Code:	54946
Email:	
Phone Number: (xxx-xxx-xxxx)	
Alternative Phone Number: (xxx-xxx-xxxx)	

Applicator

Name of Applicator Firm:	Jones Fish Hatcheries and Distributors LLC, DBA Wisconsin...
Applicator Certification #:	073906, 092501, 077803, 105360, 112869, 114056
Business Location License #:	93-028702-024684
Restricted Use Pesticide #:	
Address:	N7828 Town Hall Rd
City:	Eldorado
State:	WI
Zip:	54932
Email:	jim@wisconsinlpr.com
Phone Number: (xxx-xxx-xxxx)	920-872-2032

Adjacent Riparian Property Owners

NOTE: Phone and email address will not be publicly viewable.

☑ Uploaded riparian owners to attachment tab

Name	Address	Phone	Email Address

Site Information - Complete

Waterbody Containing Control Area(s)

Waterbody Property Owners Association or Waterbody District Representative : ☐ None

Water Body Name: Pine Lake

Primary County: Waushara

Latitude: 44.232529

Longitude: -89.162807

Section: 02

Township: 20

Range: 11

Direction: ◉ E ○ W

Waterbody Surface Area: 156 acres

Estimated Surface area that is 10ft or less 45 acres

Proposed Control Area(s)

Area(s) Proposed for Control:

Site Name (Optional)	Treatment Length		Treatment Width			Estimated Acreage		Average Depth		Calculated Volume	
EWM	0	ft. x	0	ft.	÷ 43,560 ft.^{2} =	12.00	ac	10	ft =	120.00	ac-ft

Estimated Acreage Grand Total: 12.00 ac

Calculated Volume Grand Total: 120.00 ac-ft

Is the area with in or adjacent to a sensitive area designated by the Department of Natural Resources. More Information

○ Yes ◉ No

If the estimated acreage is greater than 10 acres, or is greater than 10 percent of the estimated area 10 feet or less in depth in Section II, complete and attach Form 3200-004A, Large-Scale Treatment Worksheet.

Chemical Aquatic Plant Control Information - Form 3200-004 (R 2/17)

Notice: Use of this form is required by the Department for any application filed pursuant to s. 281.17(2), Wis. Stats., and Chapters NR 107, 200 and 205, Wis. Adm. Code. This permit application is required to request coverage for pollutant discharge into waters of the state. Personally identifiable information on this form may be provided to requesters to the extent required by Wisconsin's Open Records Law [ss. 19.31-19.39, Wis. Stats.].

Treatment Type:

◉ *Lake* ○ *Pond* ○ *Wetland* ○ *Marina* ○ *Other*

Has a Lake Management plan been provided to the DNR?	If Yes, date approved of most current copy	Link to Approved Plan:
◉ Yes ○ No ○ Don't Know	2/20/2023	☑ Uploaded Plan copy as an Attachment

Does the proposed plant removal agree with the approved plan? ◉ Yes ○ No

If NO, explain, Attach additional sheets if necessary.

Goal of Aquatic Plant Control:

- ☑ Maintain navigation channel
- ☑ Maintain boat landing and carry in access
- ☐ Improve fish habitat
- ☐ Maintain swimming area
- ☑ Control of invasive exotics
- ☐ Other

Nuisance Caused By:

- ☐ Algae
- ☐ Emergent water plants (majority of leaves & stems growing above water surface, e.g. cattail, bulrushes)
- ☐ Floating water plants (majority of leaves floating on water surface, e.g., water lilies, duckweed)
- ☑ Submerged water plants (leaves & stems below surface, flowering parts may be exposed: milfoil, coontail)
- ☐ Other

List Target Plants

☐ Algae	☐ Flowering Rush	☐ Purple Loosestrife
☐ Common/Glossy Buckthorn	☐ Hybrid Cattail	☐ Reed Canary Grass
☐ Coontail	☑ Hybrid Watermilfoil	☐ Reed Manna Grass
☐ Curly-Leaf Pondweed	☐ Japanese Knotweed	☐ Starry Stonewort
☐ Duckweed	☐ Naiad	☐ Yellow Floating Heart
☐ Elodea	☐ Narrow-Leaf Cattail	☐ Yellow Iris
☑ Eurasian Watermilfoil	☐ Phragmites	☐ Pondweed

Other Target Plants:

Note: Different plants require different chemicals for effective treatment. Do not purchase chemical before identifying plants.

Chemical Control

Full Trade Name of Proposed Chemical(s)

☐ Agristar 2,4-D Amine	☐ Clipper	☐ K-Tea	☐ SCI-62
☐ Algimycin PWF	☐ Clipper SC	☐ Littora	☐ Sculpin G
☐ Alligare 2,4-D	☐ Current	☐ Milestone	☐ SeClear
☐ Alligare Argos	☐ Cutrine-Plus	☐ Nautique	☐ SeClear G
☐ Alligare Diquat	☐ Cutrine-Plus Granular	☐ Navigate	☐ Shoreklear-Plus
☐ Alligare Ecomazapyr	☐ Cutrine-Ultra	☐ Navitrol	☐ Shredder Amine
☐ Alligare Glyphosate 5.4	☐ DMA 4 IVM	☐ Navitrol DPF	☐ Sonar AS
☐ Aqua Neat	☐ Earthtec	☐ Phycomycin SCP	☐ Sonar Genesis
☐ Aqua Star	☐ Element 3A	☐ Polaris	☐ Sonar H4C
☐ AquaPro	☐ Flumioxazin 51% WDG	☐ Polaris AC	☐ Sonar PR
☐ Aquashade	☐ Formula F-30	☐ Pond-Klear	☐ Sonar Q
☐ Aquashadow	☐ Garlon 3A	☑ ProcellaCOR EC	☐ Sonar RTU
☐ Aquastrike	☐ Green Clean	☐ Refuge	☐ Sonar SRP
☐ Aquathol K	☐ Habitat	☐ Renovate 3	☐ SonarOne
☐ Aquathol Super K	☐ Harpoon	☐ Renovate LZR	☐ Stingray
☐ Avast! SC	☐ Harvester	☐ Renovate LZR Max	☐ Symmetry NXG
☐ Captain	☐ Havoc Amine	☐ Renovate Max G	☐ Touchdown Pro
☐ Captain XTR	☐ Hydrothol 191	☐ Renovate OTF	☐ Tribune
☐ Chinook	☐ Hydrothol Granular	☐ Reward	☐ Trycera
☐ Clearcast	☐ Komeen	☐ Rodeo	☐ Weedar 64
☐ Clearigate	☐ Komeen Crystal	☐ Roundup Custom	☐ Weedestroy AM-40

Other Proposed Chemical(s):

Have the proposed chemicals been permitted in a prior year on the proposed site?

○ *All* ○ *Some* ◉ *None*

What were the results of the treatment?

Method of Application: Injection

Other Method of Application

NOTE: Chemical fact sheets for aquatic pesticides used in Wisconsin are available from the Department of Natural Resources upon request.

Alternatives to Chemical Control:	Feasible?	If No, Why Not?
1. Mechanical harvesting	○ Yes ◉ No	spread AIS
2. Manual removal	○ Yes ◉ No	too large an area
3. Sediment screens/covers	○ Yes ◉ No	not selective
4. Dredging	○ Yes ◉ No	not selective, too expensive
5. Waterbody drawdown	○ Yes ◉ No	no ability to drawdown
6. Nutrient controls in watershed	○ Yes ◉ No	not a control option for immediate concerns
7. Other:	○ Yes ○ No	

Note: If proposed treatment involves multiple properties, consider feasibility of EACH alternative for EACH property owner.

Will surface water outflow and/or overflow be controlled to prevent chemical loss?

○ *Yes* ◉ *No*

Is the treatment area greater than 5% of surface area?

◉ *Yes* ○ *No*

Waterbody concentration calculations (in ppm.)

Refer to DNR Waterbody pages http://dnr.wi.gov/lakes and https://dnr.wisconsin.gov/topic/lakes/plants/forms to answer the following:

Does the waterbody stratify? ◉ *Yes* ○ *No*

- If yes, calculate whole waterbody concentration using volume above thermocline.
- If no, calculate whole waterbody concentration using total lake value

Herbicide Name	Other Herbicide	E PA Reg. No.	Whole Waterbody Concentration (mg/l = ppm)
	ProcellaCOR EC	67690-80	0.00038 ppm

WPDES Permit Request

Is WPDES coverage being requested? Refer to http://dnr.wi.gov/topic/wastewater/aquaticpesticides.html for more information

○ *Yes - complete section VII with signature.*

◉ *No*

- ◉ *Already have WPDES*
- ○ *WPDES coverage not needed*

Required Attachments and Supplemental Information

Upload Required Attachments (15 MB per file limit) - Help reduce file size and trouble shoot file uploads

* indicates completion of this item is required

Note: To add additional attachments using the down arrow icon. To replace an existing file, use the 'Click here to attach file ' link. To remove additional items, select the item and press CNTRL Delete.

Riparian Owners	File Attachment	Pine_permit_addresses_2023.pdf
Public Notice	File Attachment	Pine_Lake_legal_PROOF_2023.pdf
Large Scale Worksheet	File Attachment	Pine_lk_largescale_2023.pdf
Site Map	File Attachment	Pine_EWM_2023.pdf
Lake Management Plan	File Attachment	Pine_Lake_APM_final_rd.pdf

Fee Calculation

Chemical Control Application

1. s. NR 107.11(1), Wis. Adm. Code, lists the conditions under which the permit fee is limited to the $20 minimum charge.
2. s. NR 107.11(4), Wis. Adm. Code, lists the uses that are exempt from permit requirements.
3. s. NR 107.04(2), Wis. Adm. Code, provides for a refund of acreage fees if the permit is denied or if no treatment occurs.

If Proposed treatment is over 0.25, calculate acreage fee: (round up to nearest whole acre, to maximum of 50 acres)	12.00
acres X $25 per acre = $	$300.00
If proposed treatment is less than 0.25 acre, acreage fee is $0	
Basic Permit Fee (non-refundable)	$20.00
Total Fee	$320

Payment Information

Invoice Number:	WP-00040922
Payment Confirmation Number:	WS2WT3010029227
Amount Paid:	$320

Sign and Submit

Applicant Responsibilities and Certification

1. The applicant has prepared a detailed map which shows the length, width and average depth of each area proposed for the control of rooted vegetation and the surface area in acres or square feet for each proposed algae treatment.
2. The applicant understands that the Department of Natural Resources may require supervision of any aquatic plant management project involving chemicals. Under s.NR 107.07 Wis. Adm. Code, supervision may include inspection of the proposed treatment area, chemicals and application equipment before, during or after treatment. The applicant is required to notify the regional office 4 working days in advance of each anticipated treatment with the date, time, location and size of treatment unless the Department waives this requirement. Do you request the Department to waive the advance notification requirement?
   (●) **Yes** ( ) **No**
3. The applicant agrees to comply with all terms or conditions of this permit, if issued, as well as all provisions of Chapter NR 107, Wis. Adm. Code. The required application fee is attached.
4. The applicant will provide a copy of the current application to any affected property owners' association inland Lake District and, in the case of chemical applications for rooted aquatic plants, to all owners of property riparian or adjacent to the treatment area. The applicant has also provided a copy of the current chemical fact sheet for the chemicals proposed for use to any affected property owner's association or inland Lake District.
5. Conditions related to invasive species movement. The applicant and operator agree to the following methods required under s.NR 109.05(2), Wis. Adm. Code for controlling, transporting and disposing of aquatic plants and animals, and moving water:
   - Aquatic plants and animals shall be removed and water drained from all equipment as required by s.30.07, Wis. Stats., and ss. NR 19.055 and 40.07, Wis. Adm. Code.
   - Operator shall comply with the most recent Department-approved 'Boat, Gear, and Equipment Decontamination and Disinfection Protocol', Manual Code #9183.1, available at http://dnr.wi.gov/topic/invasives/disinfection.html

All portions of this permit, map and accompanying cover letter must be in possession of the chemical applicator at the time of treatment. During treatment all provisions of Chapter NR 107 107.07 and NR 107.08, Wis. Adm. Code, must be complied with, as well as the specific conditions contained in the permit cover letter.

I hereby certify that that the above information is true and correct and that copies of the application shall be provided to all affected property owners promptly and that the conditions of the permit will be adhered to. All portions of this permit, map and accompanying cover letter must be in possession of the applicant or their agent at time of plant removal. During plant removal activities, all provisions of applicable Wisconsin Administrative Rules must be complied with, as well as the specific conditions contained in the permit cover letter.

Steps to Complete the signature process

IMPORTANT: All email correspondence will be sent to the address associated with your WAMS ID).

1. Read and Accept the Responsibilities and Certification
2. Press the Initiate Signature Process button
3. Open the confirmation email for a one time confirmation code and instructions to complete the signature process.

You will receive a final acknowledgement email upon completing these steps .

☑ Check if you are signing as Agent for Applicant. i:0#.f|wamsmembership|jscharl signed on 2023-05-

☑ I hereby certify that the above information is true and correct and that copies of this submittal shall be provided to the appropriate parties named in the contact section and that the conditions of the permit and pesticide use will be adhered to.

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Aquatic Plant Management Herbicide Treatment Record

Form 3200-111 (R4/20)

Notice: Completion of this form is a condition of the permit and provides records required by WDNR (NR 107) and DATCP (ATCP 29.21 and 29.22). The Department may not issue you future permits unless you complete and submit this form. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law [ss. 19.31-19.39, Wis. Stats.].

Submit this form: (1) immediately if any unusual circumstances occurred during treatment
(2) as soon after treatment as possible, no later than 30 days
(3) by October 1 if no treatment occurred

Completion of this form along with the permit satisfies the requirements of WDNR (NR 107) and DATCP (ATCP 29.21 and 29.22).

Permit Number	Water body Name (including ponds, e.g., Smith Pond)
NE-2023-70-17349	Pine Lake
County: Waushara	Permit Holder Name (Customer Name): Pine Lake Property Owners Association

Permit Holder Address	City	State	Zip Code
PO Box 45	King	WI	54946

Treatment Information

Treatment Date(mm/dd/yyyy)	Starting Time (24:00 hour)	Ending Time (24:00 hour)	Water Temp	☐ C ☑ F	Ambient Air Temp	☐ C ☑ F
6/19/2023	08:30	12:00	71		68-77	

Wind Speed (mph)	Wind Direction	Expected Duration of Chemical Residuals
1-3	South East	5 days

Adverse Conditions Noted (i.e., dead fish, spawning fish, algae bloom, etc.)

If adverse conditions noted, indicate corrective actions taken

Comments

Onsite Supervision by DATCP and/or DNR Staff: ○ Yes ◉ No

If Yes, Supervisor Name :

Mixing and Loading Site Location (if other than business site or from prepackaged retail container or applied with equipment with a total capacity of not more than 5 gallons liquid or 50 pounds dry)

Pine Lake Boat Launch

Water User Restriction

☐ No Restrictions ☐ Consuming Fish ☐ Pet/Livestock Water ☐ Irrigation (Crop)
☐ Swimming ☐ Drinking Water ☑ Irrigation Other: non turf areas

☑ Herbicide Treatment and Water Use Restrictions Signs Posted In Accordance With NR 107 and ATCP 29.22?

Applicator shall provide each customer with a free copy of each pesticide label used (if requested)

Applicator Information

Individual or Business Name	Telephone xxx -xxx-xxxx
Wisconsin Lake & Pond Resource, LLC	920-872-2032 x

Street Address		
N7828 Town Hall Rd		
City	**State**	**ZIP Code**
Eldorado	WI	54932

Individuals Making or Supervising Pesticide Application

Last Name	First	Certification #	License #
Scharl	James	77803	224355
Anderson	Jaime	118179	519897

Name of Person Completing Form

Jaime Anderson

Date: 6/19/2023

Aquatic Plant Management Herbicide Treatment Record

Form 3200-111 (R4/20)

Site No	Property Name	Address / Fire No	Treated acreage	Permitted Acreage	Sensitive Area?	Latitude	Longitude
A-P	n/a	n/a	11.76	12.00	☐		

Herbicide Name	Other Herbicide	EPA Reg. No.	Amount Applied	Units	Application Concentration Rate (mg/l = ppm)
ProcellaCOR EC		67690-80	404	PDU	0.008

TS	SP		Site(s)	TS	SP		Site(s)	TS	SP		Site(s)
☐	☐	Cattail		☐	☑	Flat-Stem Pondweed		☐	☐	Richardson Pondweed	
☐	☑	Chara		☐	☐	Floating-Leaf Pondweed		☐	☐	Robbins Pondweed	
☐	☑	Coontail		☐	☑	Illinois Pondweed		☐	☐	Sago Pondweed	
☐	☐	Curly-Leaf Pondweed		☐	☐	Large-Leaf Pondweed		☐	☐	Watershield	
☐	☐	Duckweed		☐	☐	Northern Milfoil		☐	☐	White Water Lily	
☐	☑	Elodea		☐	☐	Phragmites		☐	☐	Wild Celery	
☑	☐	Eurasion /hybrid Milfoil		☐	☐	Planktonic Algae		☐	☑	White-Stem Pondweed	
☐	☐	Filamentous Algae		☐	☐	Purple Loosestrife					

Other Plants (not listed above)

TP	SP	Name	Site(s)
☐	☐		

Required Attachments and Supplemental Information

Upload Required Attachments (15 MB per file limit) - Help reduce file size and trouble shoot file uploads

* indicates completion of this item is required

Note: To add additional attachments using the down arrow icon. To replace an existing file, use the 'Click here to attach file ' link. To remove additional items, select the item and press CNTRL Delete.

Site Map	File Attachment
Lake Management Plan	File Attachment

Fee Calculation

Chemical Treatment Record

No additional payment required for submitting treatment records.

Chemical Control Application

1. s. NR 107.11(1), Wis. Adm. Code, lists the conditions under which the permit fee is limited to the $20 minimum charge.
2. s. NR 107.11(4), Wis. Adm. Code, lists the uses that are exempt from permit requirements.
3. s. NR 107.04(2), Wis. Adm. Code, provides for a refund of acreage fees if the permit is denied or if no treatment occurs.

If Proposed treatment is over 0.25, calculate acreage fee: (round up to nearest whole acre, to maximum of 50 acres)	0.00
acres X $25 per acre = $	$0.00
If proposed treatment is less than 0.25 acre, acreage fee is $0	
Basic Permit Fee (non-refundable)	$20.00
Total Fee	$20

Sign and Submit

Status

You can not submit your form until you have completed all areas of the treatment record.

Please complete the following missing items.

Treatment Activity: Complete

Attachments and Supplemental Information: Optional

Applicant Responsibilities and Certification

I certify that I have completed the Chemical Treatment Record as required by WDNR (NR107) and DATCP (ATCP 29.21 and 29.22).